[Continued on next page]

(54) Title: SYSTEM FOR MAINTAINING DATA OF A MOBILE STATION
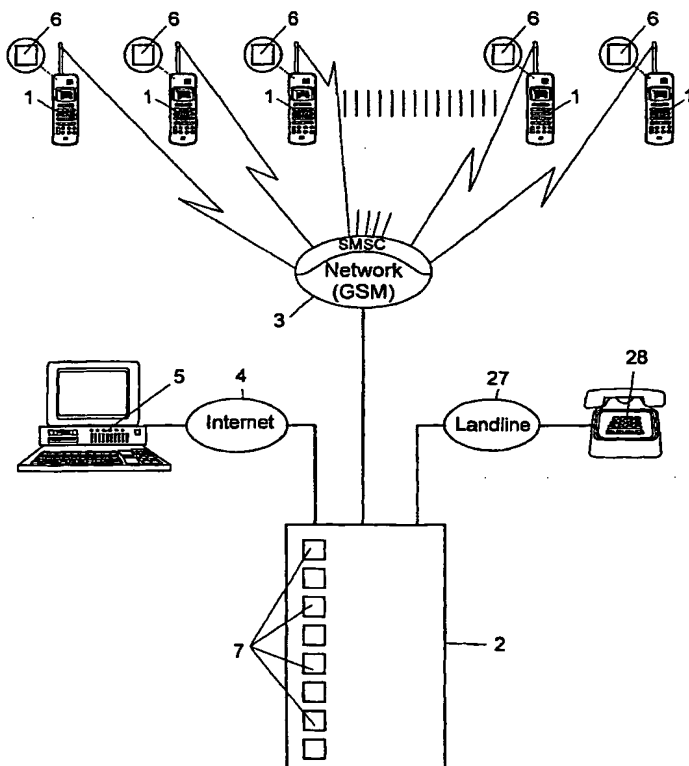
(57) Abstract: A mobile telephone data
maintenance system is provided in which
participating system members, each of whom is
generally a user of a mobile telephone (1), are each
provided with a data base record (7) in a central
computerized server (2) that is accessible by way
of a telephone network (3) with which the mobile
telephone is associated. The computerized server
is programmed to receive uploaded data from the
memory (6) of a mobile telephone; to store same in
the associated data base record and, in the event that
the relevant data base record already has existing
data stored therein, then, preferably at the option of
the user, either to replace said existing data with the
uploaded data or to compare the uploaded data with
the existing data and to update the existing data
already stored in the relevant data base record. The
computer is also programmed to release a packet
of data stored in the data base record, preferably
limited in size, to the relevant participating system
member or an authorized mobile telephone user
under predetermined conditions. The computerized
server is preferably also accessible by way of the
Internet (4) and is programmed to release said
data stored in the relevant data base record under
predetermined conditions by way of the Internet
and to receive update data. The supply of security
information to the computerized server may
optionally be required.

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TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYSTEM FOR MAINTAINING DATA OF A MOBILE STATION.

5 **FIELD OF THE INVENTION**

This invention relates to a mobile telephone data maintenance system and, more particularly, to a system aimed primarily at providing a backup of data maintained in the memory of a mobile telephone such as a cellular

10 telephone.

BACKGROUND TO THE INVENTION

Mobile telephones, typically cellular telephones, are becoming increasingly

15 popular as a communications medium. Accompanying such popularity is the occurrence of mobile telephones being lost or being stolen.

A large proportion, if not all, of such mobile telephones have a memory of one form or another in the telephone which can be employed by the user of

20 the telephone for the purpose of storing data, typically data in the form of the names and telephone numbers of contact persons, but which data may include other items of personal data.

In the event of such a mobile telephone being lost or stolen, there is very

25 often considerable inconvenience to the telephone user. In a fairly sophisticated situation, the user may have a personal computer of one form or another and may have maintained a backup copy of the data in the memory of the mobile telephone. In such a case the data can be retrieved and transferred to a new telephone, for example, using either infrared

30 communication link means or a data link cable. Even in such situations the telephone user must be extremely careful and well-organized to ensure that a backup is made regularly of new, added or amended data in order that the

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backup copy maintain its value. Such a backup procedure can, of course, generally only be carried out when the mobile telephone and personal computer are physically present in the same place. Likewise, the data can only be retrieved when the user has access to the personal computer. This is

5   not always convenient, in particular when the user is traveling without a notebook or the like in which the back-up data may be stored.

Apart from this basic difficulty, there also exists the problem that many mobile telephones have a limited amount of memory available for use in storing data

10   of this nature, this being particularly so in the case of cellular telephones utilizing a SIMM card as the memory of the telephone, and especially older technology SIMM cards. Tailoring the amount of data stored and accumulated on a personal computer for the purposes of transferring it to the mobile telephone can also be troublesome.

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In numerous other cases the mobile telephone user does not have a personal computer available for the purpose of making a backup copy of the data stored on the mobile telephone's memory. In this instance, in the event that a telephone is lost or stolen, the data is generally also lost. The only way

20   in which such a mobile telephone user can maintain backup information is in the form of hard copy which is inconvenient, often impractical and seldom in fact done.

OBJECT OF THE INVENTION

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It is, accordingly, an object of this invention to provide a mobile telephone data maintenance system that will enable data in the memory of a mobile telephone to be recovered or updated in a simple and effective manner.

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SUMMARY OF THE INVENTION

In accordance with one aspect of this invention there is provided a mobile telephone data maintenance system in which participating system members, each of whom is generally a user of a mobile telephone, are each provided with a data base record in a central computerized server that is accessible by way of the telephone network with which the mobile telephone is associated, the computerized server being programmed to receive uploaded data from the memory of a mobile telephone; to store same in the associated data base record and, in the event that the relevant data base record already has existing data stored therein, then either to replace said existing data with the uploaded data or to compare the uploaded data with the existing data and to update the existing data already stored in the relevant data base record, the computer also being programmed to release data stored in the data base record to the relevant participating system member or an authorized mobile telephone user under predetermined conditions.

Further features of the invention provide for the computerized server to be programmed to either replace said existing data with the uploaded data or to compare the uploaded data with the existing data and to update the existing data already stored in the relevant data base record selectively according to the operation requested by the relevant mobile telephone user; for the computerized server to furthermore be accessible by way of the internet and to be programmed to release said data stored in the relevant data base record under predetermined conditions by way of the Internet; for release of the data stored in a data base record to be dependent upon the supply of security information such as a PIN number or biometric identification data to the computerized server; for the computerized server in instances that it is accessible by way of the Internet to be programmed to receive update data by way of the Internet; and for the computerized server to be programmed to supply to the relevant mobile telephone in each instance of a request for a download being received, a packet of data having a size not greater than

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either the largest uploaded packet of data received from the particular mobile telephone or a predetermined, preprogrammed maximum size.

5   A still further feature of the invention provides for the computerized server to be programmed to compare data uploaded from the memory of a mobile telephone or by way of the Internet with data stored in the data base record and to identify items of data present in the data base record and absent from the uploaded data and, in such an instance, to make an inquiry of the mobile telephone user as to whether or not that data should be deleted from the data 10   base record. Such an inquiry could be made by the computerized server formulating, for example, an SMS or other suitable message, and transmitting same to the mobile telephone with a request that the mobile telephone user respond.

15   It will be understood that the data will, in general, be predominantly data relating to contact names, optionally addresses, and in particular telephone numbers, but it may also include personal or other data which a mobile telephone user wishes to have available on the mobile telephone at all times.

20   The invention also provides a computerized server programmed and adapted to function as the computerized server of a system as defined above.

There are a variety of different facilities that can be built into a system as defined above and these will become more apparent from the following 25   extended description of the invention in one proposed application thereof. In this description reference will be made to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

30   In the drawings:-

Figure 1   is a schematic illustration of the individual items of hardware

utilized in one embodiment of system according to the invention and indicating their interaction; and,

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Figure 2 is a flow diagram illustrating the operation of the computerized server and indicating the programming thereof.

DETAILED DESCRIPTION WITH REFERENCE TO THE DRAWINGS

In a preferred embodiment of the invention illustrated schematically in the

10   drawings, a series of mobile telephones (1), typically cellular telephones having SIMM cards providing their memory, are each capable of communication with a central computerized server (2), via the associated wireless network (3), such as a GSM network that also has a short message (SMS) capability. Of course, the type of memory in the cellular telephones is

15   irrelevant to the invention and SIMM cards are mentioned simply by way of example.   Similarly, the nature of the wireless network is also irrelevant as it is simply a means of communicating data. The computerized server may also be accessed, in this implementation of the invention, by way of the Internet (4) from a personal computer (5) or the like.

20

Each of the mobile telephones has a generally limited size of memory indicated by numeral (6), frequently carried on a SIMM card as already indicated, in which personal data, in particular the names and telephone numbers of contact persons, can be maintained. Each participating system

25   member is allocated a data base record indicated by numeral (7) in the computerized server in which there is stored, or provision is made for there to be stored, personal data corresponding to that in the memory of each of the participating system members' mobile telephones. The data base record may be subdivided into sub-records, if required, so that data of a different nature

30   can be separated out. For example, in the case of data relating to the identity and contact telephone numbers of contact persons, these can be divided into different sub-records such as those relating to business, private, or other

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categories.

Referring now more particularly to Figure 2, there is illustrated, in flow
diagram format, activities which the computerized server is programmed to
5   perform. The server has, in the first place, an interface (8) that receives
telephone calls from the mobile telephones of participating system members
or, alternatively, data communicated to or from a personal computer over the
Internet. The server is programmed to automatically detect the telephone
number from which a call is made as indicated by numeral (9) or,
10   alternatively, if the auto-detect number is not used, for example if the
communication is from a personal computer, the telephone number (or other
identification number) must be input as indicated by numeral (10). In each
case the participating system member is requested to input their personal
security data that in this particular case is simply a PIN number but, in more
15   sophisticated systems, could be biometric or other suitable recognition data.

The participating system member is verified at the next step (11) and the
relevant account is identified.

20   The options menu (12) is then activated and, in this embodiment of the
invention, four different basic options are provided. These are to upload data
from the memory (6) of the mobile telephone to the computerized server as
indicated by numeral (13); to correlate the data held on the server with that in
the memory of the mobile telephone as indicated by numeral (14); to
25   download data maintained in the data base record of the computerized
server to the memory of the mobile telephone as indicated by numeral (15)
or, alternatively, to implement a new number or change a telephone number
as indicated by numeral (16).

30   The options may be made available for selection by displaying them on the
screen of the mobile telephone, if indeed the telephone has a screen, or they
may be communicated by synthesized or recorded voice messaging. In either

case the participating system member is prompted to make the selection in an appropriate manner such as by scrolling down a screen and pressing "enter"; entering a numeral corresponding to the selected option; interactively by voice; or in any other manner applicable in a particular system.

Having made the basic selection, in all cases the participating system member is requested to select a data base record or sub-record as indicated by numeral (17).

In the three instances involving the upload or download of data, the server then connects with the relevant mobile telephone as indicated by numeral (18). In the case of uploading the data from the memory of the mobile telephone, both in the case of a simple upload and the case of a request to correlate the data on the mobile telephone in the data base record, the computerized server extracts the data from the memory of the telephone as indicated by numeral (19). In both cases the computer then compares the data contained in the data base record with that uploaded from the mobile telephone as indicated by numeral (20). Additional data not present in the data base record and which has thus been added to the memory of the mobile telephone is added to the data base record in order to update it.

Of course the comparison step is omitted in instances in which the data is being newly installed in the data base record and in that case the uploaded data is simply transferred to the data base record.

Data present in the data base record and absent from the uploaded data from the memory of the mobile telephone is identified and a message, typically an SMS message, may be formulated as indicated by numeral (21) and sent to the relevant mobile telephone with a request as to whether or not this data should be deleted from the data base record.

The final updated data is then stored in the data base record as indicated by

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numeral (22).

In the case of a request to correlate the data in the data base record with that in the memory of the mobile telephone the server will then automatically clear
5   the memory of the mobile telephone and download the updated data to the telephone as indicated by numeral (23). It is to be noted that the correlate function serves an additional purpose in that it automatically downloads to the memory of the mobile telephone data that may have been added to it by way of the Internet or in any other way.
10

In the event that the function required of the computerized server is simply to update the data on the memory of the mobile telephone, or in the case of a new telephone, to transfer it to the memory, after the server has connected with the telephone as indicated by numeral (18), the server simply clears the
15   memory of the mobile telephone and downloads the relevant data to the telephone as indicated by numeral (24).

It is to be noted that the program preferably includes a refinement whereby the size of the package of data downloaded to the mobile telephone in either
20   of the above instances may be limited in size to the largest package of data received from the relevant telephone. This feature is particularly useful in instances of a relatively small capacity memory being available on the mobile telephone as is very often the case where the memory of a cellular telephone is held on a SIMM card.
25

The option to change or implement any number indicated by numeral (16) can include the election of whether or not to employ a voice tag and this option is presented to the participating system member during the procedure as indicated by numeral (25), prior to the name being supplied to the server
30   as indicated by numeral (26).

In all cases once an operation has been completed the participating system

member might be returned to the main menu to enable another operation to be carried out prior to logging off.

It will be understood that numerous variations may be made to the embodiment of the invention described above without departing from the scope hereof. In particular the exact procedures to be followed and which are exemplified above could be varied widely. Also, other features can be added such as, for example, the ability to call into the server via a land line (27) from a suitable telephone (28) capable of interactive communication in order to access a particular item of data contained in the data base record, for example in emergency situations. Another feature could be that the program of the computerized server automatically updates the data contained in the memory of the relevant mobile telephone in the event that the data in the data base record is updated other than by way of the mobile telephone itself and, in particular, in the event that it is updated via the Internet.

The invention therefore provides a highly effective system whereby the data stored in the memory of a mobile telephone can be maintained and restored to a mobile telephone as and when required and wherein the back-up data can also, preferably, be accessed and varied over the Internet.

CLAIMS:

1.   A mobile telephone data maintenance system in which participating system members, each of whom is generally a user of a mobile telephone (1), are each provided with a data base record (7) in a central computerized server (2) which is accessible by way of a telephone network (3) with which the mobile telephone is associated, the computerized server being programmed to receive uploaded data from the memory (6) of a mobile telephone; to store same in the associated data base record and, in the event that the relevant data base record already has existing data stored therein, then either to replace said existing data with the uploaded data or to compare the uploaded data with the existing data and to update the existing data already stored in the relevant data base record, the computer also being programmed to release data stored in the data base record to the relevant participating system member or an authorized mobile telephone user under predetermined conditions.

2.   A mobile telephone data maintenance system as claimed in claim 1 in which the computerized server is programmed to either replace said existing data with the uploaded data or to compare the uploaded data with the existing data and to update the existing data already stored in the relevant data base record selectively according to the operation requested by the relevant mobile telephone user.

3.   A mobile telephone data maintenance system as claimed in either one of claims 1 or 2 in which the computerized server is accessible by way of the Internet (4) and is programmed to release said data stored in the relevant data base record under predetermined conditions by way of the Internet.

4.   A mobile telephone data maintenance system as claimed in any one of

claims 1 to 3 in which release of the data stored in a data base record is dependent upon the supply of security information to the computerized server.

5   5.   A mobile telephone data maintenance system as claimed in any one of the preceding claims in which the computerized server is accessible by way of the Internet and is programmed to receive update data by way of the Internet.

10   6.   A mobile telephone data maintenance system as claimed in any one of the preceding claims in which the computerized server is programmed to supply to the relevant mobile telephone in each instance of a request for a download being received, a packet of data having a size not greater than either the largest uploaded packet of data received from
15   the particular mobile telephone or a predetermined, preprogrammed maximum size.

       7.   A mobile telephone data maintenance system as claimed in any one of the preceding claims in which the computerized server is programmed to compare data uploaded from the memory of a mobile telephone or by
20   way of the Internet with data stored in the data base record and to identify items of data present in the data base record and absent from the uploaded data and, in such an instance, to make an inquiry of the mobile telephone user as to whether or not that data should be deleted
25   from the data base record.

       8.   A mobile telephone data maintenance system as claimed in claim 7 in which the inquiry is made by the computerized server formulating a suitable message, and transmitting same to the mobile telephone with a
30   request that the mobile telephone user respond.

       9.   A mobile telephone data maintenance system as claimed in any one of

the preceding claims in which the data includes data relating to contact names, optionally addresses, and in particular telephone numbers.

10. A computerized server programmed and adapted to function as the computerized server of a system as claimed in any one of claims 1 to 9.
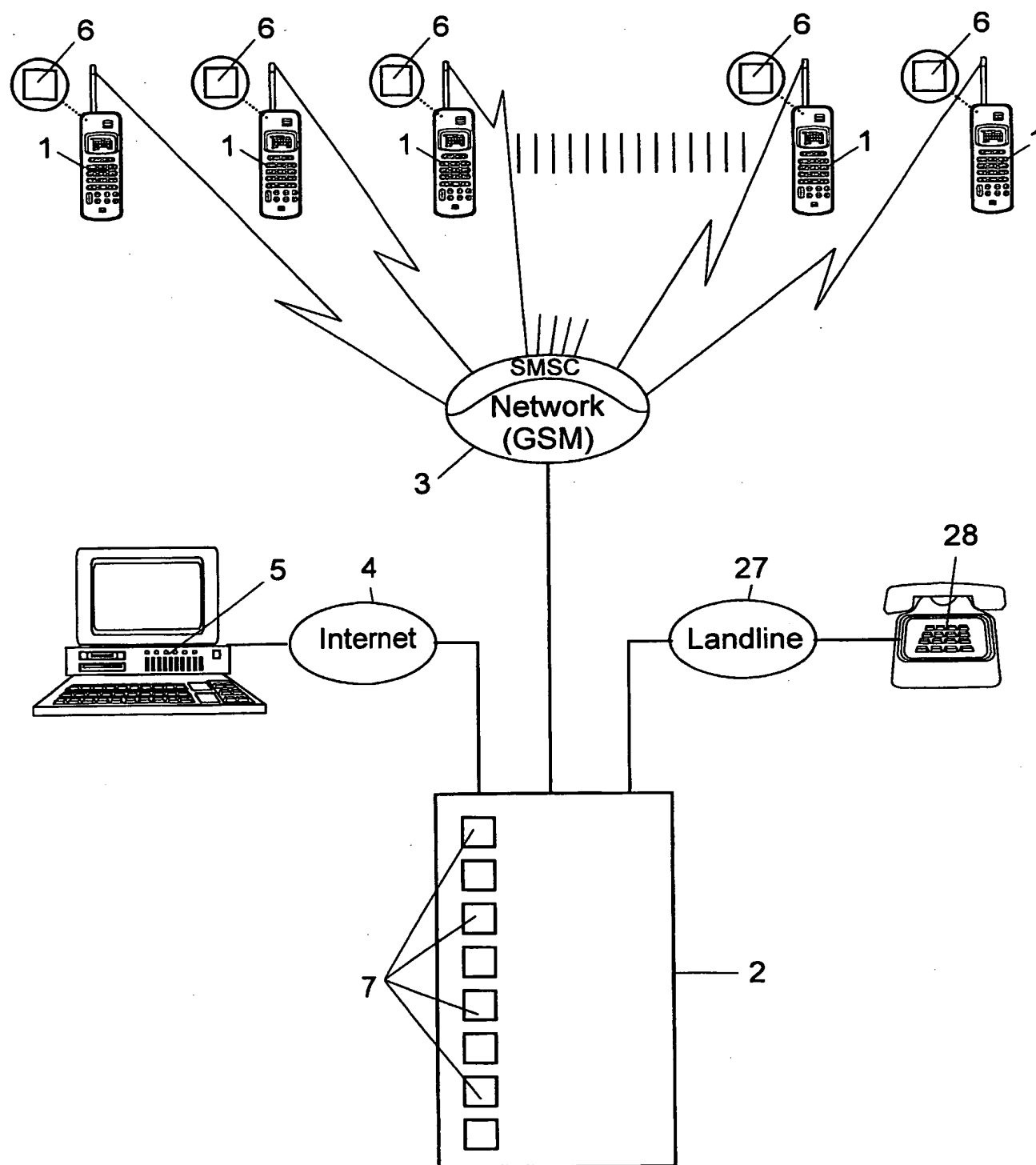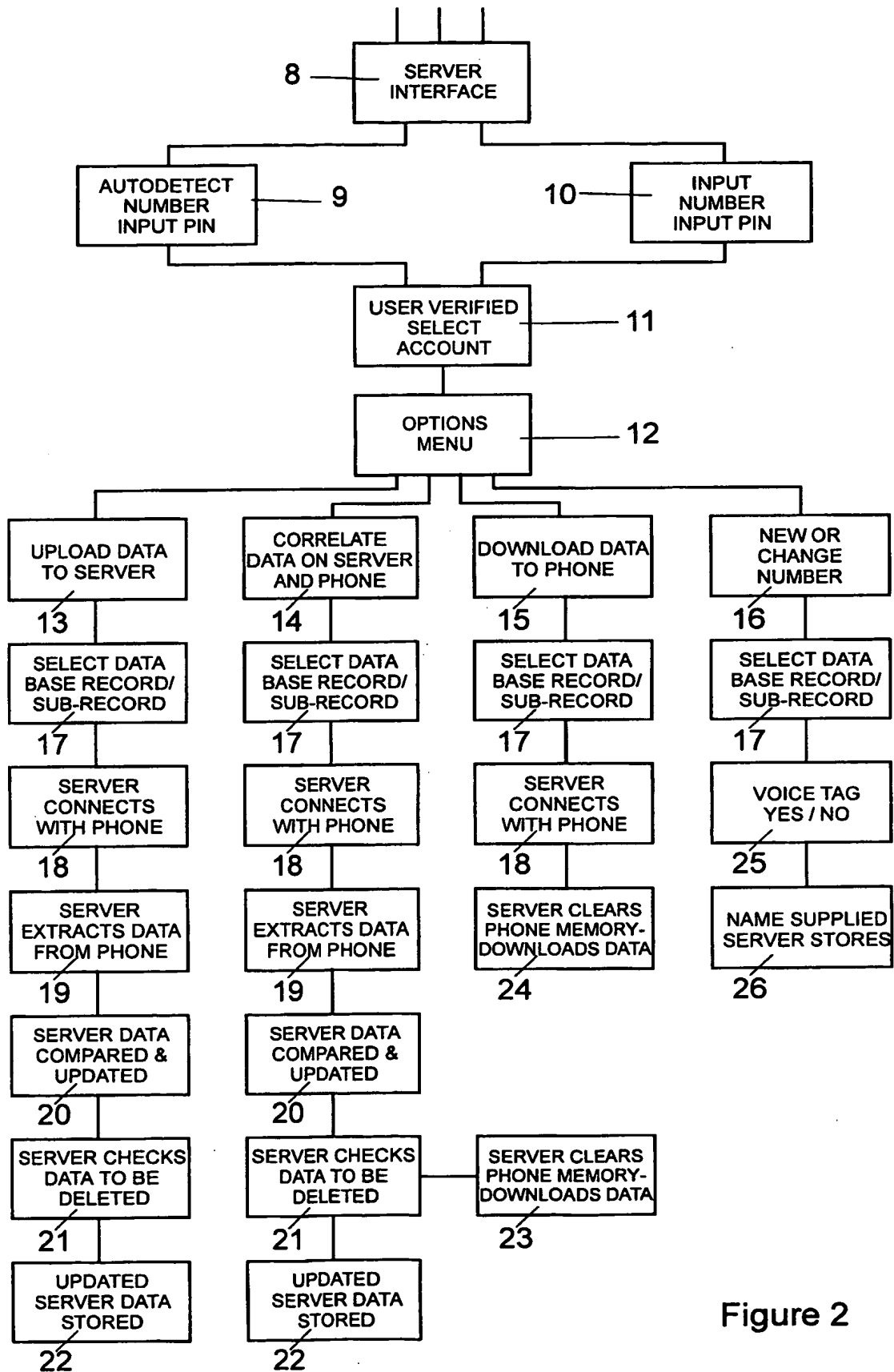
5

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25

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Figure 1

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                          ┌──┬──┬──┐
                          │  │  │  │
                    ┌─────┴──┴──┴──┴─────┐
              8 ────┤  SERVER            │
                    │  INTERFACE         │
                    └──────────┬─────────┘
          ┌────────────────────┴────────────────────┐
  ┌───────┴────────┐                        ┌────────┴───────┐
  │ AUTODETECT     │                        │   INPUT        │
  │ NUMBER     ────┼── 9        10 ─────────┤   NUMBER       │
  │ INPUT PIN      │                        │   INPUT PIN    │
  └───────┬────────┘                        └────────┬───────┘
          └────────────────────┬────────────────────┘
                    ┌──────────┴─────────┐
                    │ USER VERIFIED      │
                    │ SELECT         ────┼── 11
                    │ ACCOUNT            │
                    └──────────┬─────────┘
                    ┌──────────┴─────────┐
                    │ OPTIONS            │
                    │ MENU           ────┼── 12
                    └──────────┬─────────┘
```

UPLOAD DATA TO SERVER	CORRELATE DATA ON SERVER AND PHONE	DOWNLOAD DATA TO PHONE	NEW OR CHANGE NUMBER
13	14	15	16
SELECT DATA BASE RECORD/ SUB-RECORD	SELECT DATA BASE RECORD/ SUB-RECORD	SELECT DATA BASE RECORD/ SUB-RECORD	SELECT DATA BASE RECORD/ SUB-RECORD
17	17	17	17
SERVER CONNECTS WITH PHONE	SERVER CONNECTS WITH PHONE	SERVER CONNECTS WITH PHONE	VOICE TAG YES / NO
18	18	18	25
SERVER EXTRACTS DATA FROM PHONE	SERVER EXTRACTS DATA FROM PHONE	SERVER CLEARS PHONE MEMORY- DOWNLOADS DATA	NAME SUPPLIED SERVER STORES
19	19	24	26
SERVER DATA COMPARED & UPDATED	SERVER DATA COMPARED & UPDATED		
20	20		
SERVER CHECKS DATA TO BE DELETED	SERVER CHECKS DATA TO BE DELETED	SERVER CLEARS PHONE MEMORY- DOWNLOADS DATA	
21	21	23	
UPDATED SERVER DATA STORED	UPDATED SERVER DATA STORED		
22	22		

Figure 2

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   H04Q7/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7   H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category°	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 940 752 A (HENRICK ROBERT F) 17 August 1999 (1999-08-17) column 2, line 17 - line 45 column 3, line 28 -column 4, line 11 column 5, line 56 -column 7, line 22; figures	1,10
P,X	WO 01 60096 A (SHEAHAN RORY ANTHONY) 16 August 2001 (2001-08-16) the whole document	1-5,9,10
P,X	WO 01 62029 A (SARSKOG JOHAN) 23 August 2001 (2001-08-23) the whole document	1,2,4,9, 10

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

'A' document defining the general state of the art which is not considered to be of particular relevance

'E' earlier document but published on or after the international filing date

'L' document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

'O' document referring to an oral disclosure, use, exhibition or other means

'P' document published prior to the international filing date but later than the priority date claimed

'T' later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

'Y' document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

'&' document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 October 2002	06/11/2002

Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Tsapelis, A

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Int onal Application No

PCT/IB 02/02563

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